



Regional and seasonal response of a West Nile virus vector to climate change

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Year: 2013
Journal: Proceedings of The National Academy of Sciences of The United States of America. 110 (39): 15620-15625

Abstract:

Climate change will affect the abundance and seasonality of West Nile virus (WNV) vectors, altering the risk of virus transmission to humans. Using downscaled general circulation model output, we calculate a WNV vector's response to climate change across the southern United States using process-based modeling. In the eastern United States, *Culex quinquefasciatus* response to projected climate change displays a latitudinal and elevational gradient. Projected summer population depressions as a result of increased immature mortality and habitat drying are most severe in the south and almost absent further north; extended spring and fall survival is ubiquitous. Much of California also exhibits a bimodal pattern. Projected onset of mosquito season is delayed in the southwestern United States because of extremely dry and hot spring and summers; however, increased temperature and late summer and fall rains extend the mosquito season. These results are unique in being a broad-scale calculation of the projected impacts of climate change on a WNV vector. The results show that, despite projected widespread future warming, the future seasonal response of *C. quinquefasciatus* populations across the southern United States will not be homogeneous, and will depend on specific combinations of local and regional conditions.

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3785720>

Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Other Climate Scenario

Other Climate Scenario: AR4 GCM

Exposure :

weather or climate related pathway by which climate change affects health

Precipitation, Temperature

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Climate Change and Human Health Literature Portal

Geographic Location:

resource focuses on specific location

United States

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: West Nile Virus

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Medium-Term (10-50 years)

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content